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POPULAR Computing WEEKLY

7-13 August 1986 Vol 5 No 32

Commodore denies dropping C128



Full story inside

ATARI

Astounding graphics on both 8-bits and STs

The ST — a supreme games machine?

One in a Marillion — ST music software

GEOS

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POPULAR COMPUTING WEEKLY APOLOGISES

We're sorry that this issue is so severly reduced in content and that many regular features are missing.

This is due to circumstances entirely beyond our control, as our typesetters went into liquidation last week. Everything should be back to normal next week.

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Commodore denies 128's death

COMMODORE last week strongly denied allegations that the C128 was being dropped. Acting general manager Chris Kaday told *Popular Computing Weekly* that the machine was still in production.

The machine is however being heavily discounted in the high streets, with prices of £150-£180 in some cases with bundled hardware and software becoming increasingly common. A spokesman for London computer dealer Vic Oddens was meanwhile adamant that he had been told Commodore was abandoning the machine, claiming only the 128D was now being made.

"Our Commodore rep has told us that they have dropped the 128 altogether and that they have discontinued the 1570 disc drive," he said.

Lasky's, Smiths and Boots have all now dropped the machine, with a Smiths spokeswoman blaming lack of software support for disappointing sales. The company cleared stocks with a price cut to £169 in July.

The 128 was launched only a year ago and at that time was billed as a direct successor and upgrade to the Commodore 64. Sales have however been patchy, with the 128D with built in disc drive performing better and the launch of the 64C by Commodore US seems to have been a recognition that the 128 was not a best-seller.

Even if Commodore is not to drop the 128 immediately it now seems likely that more effort will be put behind the 64C and its Geos operating system with the Amiga and the PC series accounting for the company's efforts further upmarket.

The 128 — forgotten but not gone?

Amstrad PC launch date confirmed

AMSTRAD'S PC is to be called the PC1512, and is to be launched on September 2, the eve of the *PCW* Show. Recent reports confirm information first published in *Popular Computing Weekly* on May 29 that the machine will come in four models, with a start price of £399 excluding VAT, and will run DR's Gem.

The machine will run the Intel 8086 processor, the go-faster version of the 8088 used in the IBM PC, and will have 512K Ram expandable to 640K. Models will have monochrome or colour monitors and single or double 5¼ inch disc drives, and will cost £399, £499, £549 and £649 (all these prices exclude VAT) depending on specification. This gives a retail price of £763.50 for a twin disc machine with colour monitor, and signs of impending ecstasy on the Stock Exchange notwithstanding, this is no longer particularly remarkable in a PC compatible.

The machines will use both MSDOS and Dos Plus operating systems, and Microsoft intends to support them by issuing cheaper versions (£50-£100) of its IBM PC programs.

Memotech's new £198 CP/M micro

MEMOTECH has followed up its successful return from the grave with the launch of a £198 CP/M system. The new model is a development of earlier Memotech models, and is snappily titled the Memotech CP/M 2.2 system. It's basically a 64K machine with built-in 1Mb 3½ inch disc drive and a 512K silicon disc.

The machine comes bundled with an 80 column card, *New Word*, *SuperCalc* and communications software, so although it lacks printer and monitor its pricing is comparable to the Amstrad PCW machines. One oddity of the new Memotech is its ability to take a Ram disc expansion up to 4Mb. Keith Hook of Syntaxsoft, which is heavily involved in Memotech software development, explains that a large Ram disc of this sort could be used for databases, backed up to floppy at the end of a session.

Acornsoft plans games comeback

ACORN has linked up with Superior Software to prepare the ground for the launch of its new machine, the Baby BBC, this Autumn. The two companies intend to launch what is claimed to be "a wide range of quality — produced software games" under a joint logo.

Acorn software products manager Richard Morris said that "the consolidation of (Acorn's) technical skill and Superior's publishing experience will provide a comprehensive range of entertainment software."

The link up will be of crucial importance to Acorn, as BBC software will need some conversion if it is to run on the Baby. The latter uses Atari-style digital joystick ports rather than the BBC-style analogue, although it has Rom emulation to get round this problem.

Similarly it will only take 3½ inch disc software, and is only ADFS compatible, although a DFS transfer routine is being worked on. Basic programs will run, but Rom calls and vectors have been altered so machine code programs will virtually all need some alteration. The keyboard however conforms to the Electron layout, so it may well run some Electron software.

Robtek links up with US firm

ROBTEK has linked up with US company Shanner International in a cross-licensing deal for ST products. Robtek will release *Real Time Clock* cartridge at the PCW Show as first fruit of the deal, while Shanner will release Robtek's *DB Calc* in August. Further releases will follow.

New Metacomco Basic ready for ST

A NEW Basic should be bundled with the Atari ST within the next few months, and the odds are on Atari selecting one specially written for it by Bristol software house Metacomco.

According to Metacomco product manager Andrew Spencer, Atari approached his company with the suggestion that it should tender for the contract, "to produce a better Basic." Metacomco's evaluation copy was recently delivered to Atari Corporation in the US.

The company is also to launch several new products for the Amiga and the Atari ST at the *PCW* Show. The ST products will be the languages Cambridge Lisp, an intepreter with integral compiler priced at £149.95 and BCPL compiler price £99.95, along with the utility *Metacomco Make* costing £49.95. The Amiga products are *Metacomco Toolkit*, *Macro Assembler* and *Metacomco Shell*.

Commodore's little gem

Peter Worlock reviews Geos, the operating environment packaged with Commodore's 64C, in the first of a two-part article

Back in the summer of 1984 I was privileged to see a pre-production version of Digital Research's Gem operating system.

Gem, DR's Graphics Environment Manager, was an independent answer to Apple's Lisa and Macintosh operating systems which employed the now-famous WIMP (windows, icons, mouse, pointer) interface.

Although Gem was originally designed to run on expensive business computers, and the Mac was selling at more than £2,000, what made WIMPs so impressive was the idea that, one day, all computers might work that way. Since then, many software companies have released products that use the WIMP concept to a greater or lesser degree. Advanced Memory Systems' *AMX* products are perhaps the best known.

However, with the exception of Atari, which commissioned a 68000-version of Gem for its ST series, no other home computer manufacturer has employed a WIMP operating system on its machines (the Amiga doesn't count as a home machine).

However, later in the year Commodore 64 which will feature a new WIMP product called Geos.

Geos – standing for Graphic Environment Operating System – comes very close to turning the 64 into a Mac or ST. Obviously it isn't as fast, nor as powerful, but within the constraints of a 64k memory and an 8-bit processor it succeeds admirably.

Features

The version under review was the stand-alone implementation of Geos which runs on any 64 or C128 in 64 mode. It will be available in a few week's time and should be identical to the version bundled with the new 64C.

The package comes in three parts: the Geos operating system itself, *GeoPaint*, an excellent graphics program, and *GeoWrite*, a word processor. This week we'll be looking at Geos, and next week's issue will feature *GeoPaint* and *GeoWrite*.

Geos comes on a double-sided disc. Side one contains the operating system files, the applications programs and a number of "desktop accessories". Side two contains files for different typefaces and printer drivers, plus a communications package for a US database service called QuantumLink.

Geos is controlled by moving an on-screen pointer under joystick control. You can't operate Geos from the keyboard, and while mouse-support is promised in updates of the software, it isn't present in the current version. So you'll have to buy a joystick.

It works very well on the desktop, but from within *Geopaint* and *GeoWrite*, the joystick is a pain.

After booting Geos, the screen displays the desktop. The active disc is represented as a notebook with each file shown as an icon – a small pictograph. At the bottom-left of the on-screen pointer here, press the mouse or fire button, and a new page appears showing more disc files.

> *"An essential accessory is the Preference manager which allows you to set up the desk top to suit yourself"*

To delete a file, simply pick up a copy of its icon and move it to the wastepaper basket. Copying files is as easy – in theory. Pick up the file from one disc, move it to another, and that's it. In practice, unless you have a twin-disc system, you can't do this and file-copying from the desktop is a laborious process.

Printing a document is also straightforward. Again, pick up the file, carry it to the printer icon, and let go.

Geos will support a range of printers including the Commodore MPS 801 and MPS 1000, Star, Epson and Okidata printers. If there is no specific driver for a given model, you'll generally find that one of the standard drivers will work after a little experimentation.

Desktop accessories

Unless you're familiar with the Macintosh or the ST, or with products like Borland's *Sidekick* on IBM PCs, the concept of desktop accessories will be new.

The idea is that they replace useful articles found on genuine desktops, so you'll find a clock and calendar, a calculator, notepads and folders for holding documents.

They are available from the desktop, or from within *Geopaint* and *GeoWrite*. The most useful are the scrapbooks for pictures and text. By using these, you can build up files of often used pictures, diagrams and special text (such as letter headings) and pass them into word processing and *GeoPaint* documents as you wish.

The last accessory, and an essential one, is the Preference manager which allows you to set up the desk top to suit yourself. You can change the foreground and background colours, the speed at which the on screen pointer moves, and even re-design the pointer itself.

One of the drawbacks of software like Geos is that it often interferes with other programs Fortunately, Geos is better-behaved than most packages

Generally there are two ways to deal with other programs First you can quit Geos and load them as normal Second, you can simply select the program icon from the desktop and Geos will auto-boot it

When you're finished, pressing the *Restore* key will re-boot Geos from the disc drive

While this is a less than satisfactory way of working with your fine new operating system it will have to do until more companies produce software that supports the Geos environment

How many companies will do so remains to be seen One of the reasons for the success (in software terms) of the Mac and the ST is that their WIMP interfaces are part and parcel of the machine so software companies have little choice but to use windows and icons On the 64 128 and 64C this won't do anything unless a) they have to or b) there's a lot of money in it – don't expect too much Geos support from third-party companies

However it's not all gloom The producer of Geos Berkeley Softworks has already proved its capabilities with *GeoWrite* and *GeoPaint* Other software is promised and given the obvious attractions of the Geos environment other companies may find they'll have to support it or lose out to Berkeley's own products

Conclusions

WIMPs are the way of the future What started with the Lisa and the Mac has gradually worked its way down into the lower end of the personal computer market. The Atari STs, and the Apple II range in the US, are consolidating the position of WIMPs and Geos may do the same

It transforms the 64 into a much friendlier system to work with so much so that reverting back to the 64's own operating system after using Geos is downright irritating

Not that it's perfect The 64's memory is really too small to do Geos justice it cries out for a mouse and one should really be bundled with the package and although Geos uses some clever software techniques to speed up the disc drive it ought to be supplied in Rom – on cartridge for the 64 and 128, and built in to the firmware of the 64C

Moreover, there is no support whatsoever for cassette users The only way to deal with tape-based software is to dump Geos completely

Some of the drawbacks will be remedied soon Berkeley says it is writing mouse drivers as well as extra applications software A dedicated version for the 128 should be forthcoming by the end of the year and that should really show off the power of both Geos and the 128

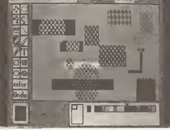
But even given the questions about how Geos performs as a new operating system it still represents a worthwhile investment as a software product – thanks to *GeoPaint* and *GeoWrite* – of which more next week

Above left: Geo Write: A word processor with five fonts.

Above right: Desk Accessories, controlled by a preference manager.

Lower left: Desk top The graphic interface to Geos.

Lower right: A full featured colour graphics workshop.



Terminal emulation in C

Leon Heller follows his recent introduction to the C programming language. Here, he shows how to turn your micro (the QL, in this case) into a 'dumb' terminal

In my recent article in *Popular*, June 5, I outlined the main features of the C programming language. The following program, which turns the QL into a simple 'dumb' terminal, should take you a stage further, as it is a simple example of the sort of program for which C was originally intended, which would normally be written in assembly language.

It shouldn't be very difficult to adapt this program to run on other machines with other compilers, and it would be a useful exercise if you are learning C, and can't think of a suitable application. I originally wrote the program for my CP/M system, and got it working on the QL within a few minutes. The basic form of a full-duplex terminal emulation program is as follows:

i) If a key is pressed, send the character to the remote system.
ii) If a character has been received from the remote system, display it.
iii) Repeat 1 and 2.

The *while* loop in the main part of the program performs the operations described above. We need to be able to get out of the loop somehow, and one way to do this is to test for the *Escape* key, and quit the program if it has been pressed.

A difficulty with "standard" C as described in Kernighan and Ritchie is that all the input functions wait until a character has been received, whereas we need to be able to alternate rapidly between the keyboard and serial port so as not to miss characters, hence the need for a *poll* function (provided with the GST QC compiler), which indicates if a key has been pressed.

A similar function for serial input has not been provided, so I had to write one (*Serin*). All I/O on the QL is buffered, so the *Fflush* function has to be used to flush the buffers, otherwise nothing will be displayed until a new line character is received or the buffer is full. *Fflush* shouldn't be needed when using CP/M.

If you use this program on the QL to communicate with another QL, there shouldn't be any problems, provided the two baud rates are the same, and the machines are connected directly, not via modems and the telephone system. The QL tends to lose characters on input, when connected to a simple modem, and a 'smart' modem with buffering is needed, or a device like the Qcode Modaptor between the modem and QL. Problems might also rise if the QL is connected to another machine, which uses different codes for new lines – for instance, the QL uses 0A (hex) whereas CP/M machines use a 0A/0D (hex) or CR/LF pair for end of line. This is quite easy to fix, just modify *Serin*, so that incoming CR/LFs are changed to CRs, and add *Serin* code to the main *while* loop, so that outgoing CRs have an LF added.

Once you have the basic program working, a good way of developing your C programming expertise would be to add additional features to it. Some ideas are file upload/download, baud rate selection, input/output character translation, half duplex option (characters are displayed as they are transmitted, not when received from the remote system), automatic logon.

```
/*
**                      term
**
** simple "dumb" terminal program for the QL written in
** C for the QC compiler.
*/

#define ESC 27       /* escape key code */

#include <stdio.h>

int *fd;             /* file descriptor for serial port */

main()
{
   char c;

   /* clear screen and enable cursor */
   cls(0);
   cursen(1);

   /* open channel for serial I/O */
   if ((fd = fopen("ser1eir", "w")) == 0)
   {
      puts("Serial port channel open error");
      exit(0);
   }

   /* this piece of code does all the work */
   while (1)
   {
      if ((c = poll(0)) != 0)        /* check for key press */
         if (c == ESC)               /* quit if <ESCAPE> */
            exit(0);
         else
         {
            putc(c, fd);             /* send to serial port */
            fflush(fd);
         }
      if ((c = serin()) != 0)        /* check serial port for incoming */
      {                              /* character */
         putchar(c);                 /* display it */
         fflush(stdout);
      }
   }
}

/*
** serin  - serial input routine
** check for pending input at serial port
** return 0 if no input
** otherwise return character
** uses QDOS traps as described in GST QC documentation
*/

serin()
{
   int regptr[8];
   char c;

/* check for pending input */
   regptr[0] = 0;
   regptr[3] = 0;
   regptr[4] = *fd;
   trap3(regptr);
   if (regptr[0] < 0) return(0);

/* get character from serial port and return it */
   regptr[0] = 1;
   regptr[1] = 0;
   regptr[3] = -1;
   regptr[4] = *fd;
   trap3(regptr);
   c = regptr[1];
   return(c & 0X7F); /* mask off msb */
}
```

A special preview of Supersoft's Rhythm King

Mark Jenkins with micro music news from the British Music Fair.

Apologies to those of you who expected a review of the Steinberg Pro 24 package for the Atari 520 in last week's issue. The person responsible has been made to transcribe "Barry Manilow's Greatest Hits" for the Oric Atmos and you should find the article in this week's supplement.

Steinberg were one of the many companies exhibiting at the British Music Fair, but most of the new software seen at the show was of a highly specialised nature.

Akai, for instance, was showing a package imported from America which allows you to visually edit and combine sounds on their S612 Sampler. The S612 costs around £800 with disc drive, is operated over Midi (so you'll need a Midi computer interface or keyboard to play it) and is six-note polyphonic with velocity sensitivity. It's very fast to use and so is a good bargain if you're after computer-controlled sampled sounds. If you have less money to spend but still want near-professional quality I generally recommend the monophonic Microvox sampler for the C64 which also has Midi.

> "Some inexpensive micro music packages offer advantages which dedicated instruments can't always offer"

What the new package adds to the Akai Sampler is the visual editing capability of the Microvox – you can see the wave shape of a sampled sound, edit it with a cursor to remove certain parts or clean up clicks and clunks, and merge several samples together. The package was being demonstrated on an SX-64, which is of course the ideal micro for the musician on the move – if you can still get one.

That example shows how some inexpensive micro music packages have advantages which dedicated instruments can't always offer. Compositional software such as C-Lab and Steinberg's Pro-16 on the C64 and Pro 24 on the Atari have comprehensive screen displays which tell the musician what is going on (in terms of tracks being full or empty, memory space remaining and so on) at all times. Dedicated sequencers such as Roland's new MC500 can do all this, but it sometimes takes a while to work out which shifted function brings up the information you need in the LCD display!

We mentioned the Microvox earlier and its manufacturers Supersoft now have their latest release, the Rhythm King. It's a Commodore 64/128 cartridge producing sampled drum sounds from a phone socket for connection to a hi-fi or mixer, and has similar menu-driven operation to the Microvox itself (eventually they'll be file-compatible too). Once you've loaded the program disc (it's also available on tape) you'll realise that there are in fact two load-up options giving different drum kit sounds. There are also several alternative demo patterns, but it wouldn't be fair to comment on either sounds or patterns here since neither were final on the copy we saw. Suffice it to say that the finished sounds will probably be pretty impressive, as will the patterns if a spot more imagination is shown.

Rhythm King from the inside

The four function keys and return (or a joystick) do most of the work and the three main options are Live Play, File Handler and Recording Studio. Live Play allows you to tap out eight sounds from the number keys, the screen going blank as you do so to help with correct sound processing. File handler is pretty straightforward, allowing you to load and save individual patterns and whole songs.

The Recording Studio allows you to create 64 patterns and 16 songs up to 85 steps long (250 on the C128). Mega-Songs can be formed from linked songs to create compositions up to 255 steps long.

Pattern creation is on a helpful grid layout and can be done in real time or step time, although in real time you have to hit the beat very closely to get the note to enter. Quantisation (automatic correction of your playing), tempo, bar length and number of bars are all programmable, so you can have 5 or 7 beats in a bar if you like, the limit being 24 bars of 32 beats in a single pattern.

A timing click is generated to help you with real time programming and every song can be named during saving. There's a small pot on the cartridge to adjust output level to match your hi-fi or mixer.

Overall the Rhythm King seems a pretty good product, but in terms of development it's some way behind the Tron Digidrum, which now has stacks of impressive sounds including metallic and glass kits, Midi capability and a lot more. Once the Rhythm King with its final sounds is in the shops it'll be easier to give a comparative assessment based on price and performance.

Supersoft, Winchester House, Canning Road, Wealdstone, Harrow, Middx HA3 7SJ. 01-861 1166

Akai UK, 12 Silver Jubilee Way, Haslemere Heathrow Estate, The Parkway, Hounslow, Middlesex TW4 6NF. 01-897 6388

If you have any queries or tips for this column, please write to Mark Jenkins at *Popular Computing Weekly*, 12-13 Little Newport Street, London WC2H 7PP. Mark would also welcome examples of your own music on audio or program tape or disc.



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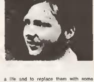
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How to rescue your shrinking fireman



Tony Kendle looks at CRL's Room 10, gives tips for The Incredible Shrinking Fireman and continues with advice on entering game pokes.

The games that have been giving me VDU eyes for the last week or so are the excellent *Leader Board* golf simulation and *Room 10* from CRL.

Leader Board, as good as it is, has some problems in that it is following on the footsteps of at least three very superb golf programs in the last few months, the latest being Ariolasoft's *Golf Construction Set*. *Room 10* on the other hand, despite reference to *Pong* in the reviews, is like nothing that we've seen before. Like *Think!*, it is an incredibly simple but completely addictive game that could not exist anywhere except on a computer. It may represent the future of computer games as mass appeal family entertainment much more than the introverted and complex arcade adventures.

What is particularly outstanding about *Room 10* is that it is possible to play it with skill, and that's not such a facile statement as it sounds. The early days of perspective 3D games such as *Ad Astra* were actually most difficult because it was impossible to judge accurately when the various objects were lined up – it seemed as if the resolution and graphics abilities of home computers weren't really up to the task. *Room 10* proves all that wrong, as by a clever use of changing size and moving shadows it creates the illusion that you really do see a ball coming towards you. Anyway, if you haven't seen it do so as soon as possible.

"Room 10 creates the illusion that you really do see the ball coming towards you"

This week we have a very welcome letter from S Jeffrey of Marsden, South Shields, for all those puzzling over Mastertronic's *Incredible Shrinking Fireman*. "First of all ignore all objects except the ID card, the red key, yellow key, blue key, the set of keys, the skeleton key, and the five parts of the rack. All of the other objects in the game will just enable you to pass through more screens but only the ones listed actually contribute to you being able to solve the game.

"The complete solution is as follows:

"First travel one screen right and pick up the ID card. Travel nine screens right and pick up the skeleton key. Travel one screen right and three screens up and you can pick up part five of the rack.

"Now go three screens down again, eight screens left, one screen up, two screens left, one screen up and pick up the set of keys. Travel one screen down, two screens right and drop the skeleton key. Travel one screen right and pick up the yellow key. Travel one screen left, one screen down, nine screens right and drop the set of keys. Pick up the blue key.

"Now go one screen up and pick up part two of the rack. Go back down one screen, six screens left and drop the ID card. Travel five screens left and pick up the red key.

"Travel one screen left, one screen up and drop parts two and five of the rack! Travel two screens right and pick up part four of the rack. Now go one screen down, one screen right, one screen down, two screens right and pick up part three of the rack. Travel two screens left, one screen down, six screens left, one screen up and drop the red and yellow keys. Pick up parts two and five of the rack. Hey Presto! You have now unshrunk Fireman Sid!"

Now to carry on with our beginner's guide to pokes and hacking. Last week we finished with some jargon that explained what machine code was and what we were trying to do with the pokes that are entered, ie, change the number for how many lives you have in the game to as many as possible.

An alternative method to use when hacking a game is to try to stop the game from realising when you have lost a life. To do this involves tracking down the sequence of instructions that work to remove

CRL's Room 10

a life and to replace them with some instructions that do nothing at all. Later on in this series you will learn exactly how to do that for yourself in your own games.

However, before we get on to such advanced stuff there are one or two things that we have to sort out about getting pokes in. You will recall from last week that a machine code game consists of a series of instructions to the computer that have to be executed in the correct order, and that this means that the game has to be started from the correct memory address.

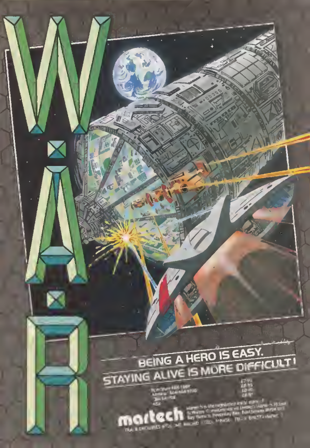
Most games you buy for home computers consist of at least two parts. Part one is a short loader program, normally written in Basic, that does the job of reading the machine code in from tape or disc and which also starts it running by a *Call* to the correct start location.

Unfortunately the situation is slightly complicated by the fact that not all computers use the same versions of the Basic

"An alternative to use when hacking a game is to stop the game realising when you have lost a life"

language – on the Commodore 64 for example the command that is used to start a machine code program is *Sys* (address) whilst on the Spectrum machines it is *Randomise User* (address) or *Print User* (address). However *Call* is most common and the overall principle is the same.

To get a poke into a game it should be self evident that you must load the machine code in memory and then make any changes you want to before the game has started running. The obvious way to do this is of course to make changes to the Basic loader if there is one, normally which would involve just editing one of the lines or adding a new line, to insert your new pokes. To achieve this it is necessary to be able to load the Basic part into the computer and then to stop it running on to load and begin the game. This can often be easier said than done and will occupy our attention for a while to come.


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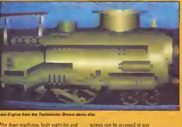
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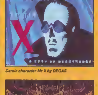
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POPULAR Computing WEEKLY
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1986 August 7-13

THE ATARI MICROS



Steam Engine from the Technicolor Dream demo disc



Comic character Mr X by DEGAS

Colourspace with NeoChrome image

The Atari machines, both eight-bit and sixteen-bit, offer unrivalled graphics capabilities, superior even to those of the powerful Commodore 64. Technical limitations always seem to compromise the quality of graphics seen in arcade games so the machines are only seen at their best when used with sophisticated hi-res graphics software

Packages like **Degas** and **NeoChrome** for the ST, the light synthesiser **Colourspace** for the 8-bit machines and ST, and **Technicolour Dream** for the eight-bits really show off the capabilities of the micros.

Technicolour Dream, from Red Rat Software, was launched at the April Atari Show, and is an excellent starter program, though with some odd omissions.

With an initial colour range of 256 shades plus 128 filters, the full palette is remarkable. The colour mixing effects are achieved by using a pair of interlaced screens, one for colour and one for luminance. This gives the pictures an interesting grainy quality which makes them appear almost like real oil paintings.

The program can be controlled using a joystick or touch tablet, which is used initially to choose a colour option from the palette of 256 shades produced on screen. To draw, you press the space bar to access the graphics screen. Both the palette and a help screen can be accessed at any time.

Options available on the drawing page include line draw, screen fill, luminance change and the filter options which can help to produce very realistic shading and shadowing. Oddly enough there are none of the usual 'circle, box, ray, brush'-type commands which are familiar from many other art packages. In that sense Technicolour Dream is not very user-friendly. But the demo pictures, some of which are shown here, testify to the quality of the graphics which can be produced with practice.

The manual includes a technical section which explains the principles behind the special effects routines.◄



NeoChrome's option page icon menu

On the more sophisticated side is **D.E.G.A.S.** for the 520ST from Batteries Included via Ariolasoft. This is a very straightforward and powerful painting program with a host of advanced functions.

The Design and Entertainment Graphic Arts System, to give it its full title, is remarkably simple to use and comes with a 50-page manual which summarises all the commands. The program has one major options menu, with a host of submenus which allow you to define your own colour palette, brush shapes, fonts, airbrush type, reflections, and so on.

The drawing functions are arranged into several groups on the main menu. At the top is a sixteen-colour selection bar, which can be varied by changing the red-green-blue balance using the 'set colours' option. Below this is a selection of sixteen brush shapes, ranging from small dots to bars, wedges and diamonds. Again, you can define your own shapes if you require.

The thirty-nine main options



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include all the drawing functions you will ever need, lines, boxes, circles, fill, drawing speed, text entry block copy airbrush lightness, shadowing mirror, and a full range of load and save functions. The best thing about DEGAS is that practically everything is user-definable if you do not want to be limited by the preset options Selected options appear inverse.

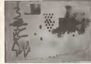
Moving to the drawing screen by pressing the right-hand mouse button, a cursor appears and you are free to draw away All the drawing and fill functions are remarkably fast. functions like the automatic shadowing effect, which can produce shadows of any colour in one of eight directions at a variety of distances form the original, are particularly useful Also remarkably good is the ability to define your own text fonts, and insert text in a number of sizes on the screen and the fill pattern definition There's also a magnify mode which blows up the area of a small box to fill the whole screen for high definition work.

D.E.G.A.S. packs a great deal into a very user-friendly program, and demonstrates the abilities of the ST to great advantage.◀

Landscape from Technicolor Dream



Demo from The Animator



More NeoChrome splodges

Less advanced but more familiar (since it now comes bundled with the ST) is Atari's own **NeoChrome** This is a much simpler program which features icon selection of functions. The left side of the main menu shows the tools available in a 3×5 grid (although not all of the functions are implemented). The menu can occupy the lower half of the graphics screen, which can save time if you have to switch options frequently, or it can be switched off to devote the whole screen to the picture

Any of the ST's 512 colours are available and can be chosen by dragging the colour map from side to side through the colour palette window Alternatively, you can alter the RGB balance.

The selection of tools is fairly limited, draw, erase, line, fill brush, spray, text, copy, and various save and load options. The biggest disappointment is that the spray can does not function in the way D.E.G.A.S.'s does, by building up a pattern as you hold the mouse button down with NeoChrome, is just plops the pattern onto the screen, and is therefore more difficult to use for realistic shading effects There are also none of the shadowing, font definition, reflection, or many other effects from D.E.G.A.S., but NeoChrome does feature a colour palette animation feature which can scroll through a selection of colours to give an illusion of movement, particularly useful for fire or water effects.

NeoChrome is still under development, but at the moment serves only as an introduction to the ST's graphics abilities.

Interestingly, at least two ST products have already been designed with NeoChrome in mind. One is **Colourspace ST** Jeff Minter's epoch making light synthesiser, the other MichTron's **Animator**

Many of you will have seen Colourspace demonstrated at computer shows. It's a psychedelic light synthesiser which allows you to use the mouse to move a cursor around the screen, select patterns, colour palettes, reflections, gravity effects and backgrounds to create mind-blowing graphic displays. Colourspace is NeoChrome compatible; you can load a Nechrome file into Colourspace to use as a background, then do your own thing with the mouse over the top (or underneath, or around the side) it's also possible to merge, reduce, reflect or distort the pictures, then save them out again, so Colourspace acts as a "picture processor" as well as a light synth It's sarjaz, as Jeff would say

From MichTron via Microdeal comes **The Animator**, a complex program which allows you to combine frames and backgrounds created with NeoChrome into cartoon-style animations. You can also convert files from other art packages into NeoChrome format.

The Animator first requires that you create an outline box in which to define your object. This must be a rectangle outlined in white whose interior width is a multiple of 16 pixels. From your master drawings you must produce three masks, one for the details which always remain the same, one for the transparent and opaque parts of the outline rectangle, and one for the area of the outline rectangle to be coloured by the base colour If that sounds complicated – it is.

The masks are arranged over three copies of the master image, and used to create a mask file. Once saved, you are now ready to animate.

There are ten special animation commands, which allow you to define the order in which the frames appear how long it appears on the screen its plane depth (there are 255 levels available), and its horizontal and vertical position on the screen The actual speed of the animation is defined at a later stage, once the 'movie' has been finished, checked and filed and you want to display it to the world.

The Animator is NOT remarkably easy to use, and does NOT give staggeringly sophisticated results. But, if you're disappointed by the motionless nature of your graphics package yet can't handle complex programming, it might be the best way to inject some life into your art.◀

Red Rat Software, 11 Fennel Street, Manchester, M4 3DU, 061-835 1055

Ariolasoft, 68 Long Acre, Covent garden, London, WC2, 01-836 3411

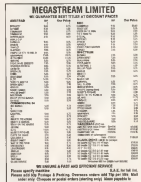
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Busy bee drawn by Ariolasoft's DEGAS



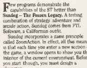
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JACK ROSEBURY ON STATE-OF-THE-ART GAMES, INCLUDING *THE PAWN*, THE FORTHCOMING *STARGLIDER*, AND U S CONTENDERS *SUNDOG* AND *HEXES*



Few programs demonstrate the capabilities of the ST better than **Sundog – The Frozen Legacy.** A testing combination of strategy adventure and arcade action, Sundog comes from FTL Software, a Californian outfit.

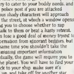
Sundog incorporates a game principle called ZoomAction. In effect, all this means is that each time you enter a new section of the game, a window opens to show you the interior of the current environment. Before you start though, you must design a character

Like many an adventure game, Sundog assigns your character several attributes – intelligence, luck, strength and so on – and you can distribute the points available amongst these attributes You can also name your character Games can be saved and reloaded from any point, and since Sundog is so complex you will inevitably need to use this facility

All the functions can be controlled by the mouse, which controls a cross-sight on the screen The left button is used to select screen options and move your character in the direction of the sight, while the right-hand button returns to the previous screen or shows your personal status.

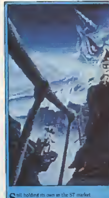
The game opens in the interior of your ship, Sundog. An inheritance from your uncle, the ship is a battle scarred trading vessel Your other inheritance is a mission to deliver a cargo of "cryogens" – frozen colonists – to their intended destination First you have to find the colonists – then you have to find the colony, which could be part of any one of several cities.

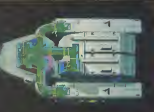
Moving around the city is achieved by controlling the cross-hair sight, which your character will follow Many of the colourful buildings you encounter are just scenery, so it's a matter of trial and error, testing them all to see which you can enter You will need to find a bank to get some ready cash, an eatery to cater to your bodily needs, and often a police post if you are attacked

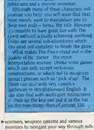


Various shady characters will approach you on the street, at which a window opens allowing you to choose whether to zap them talk to them or beat a hasty retreat. You can lose a good deal of money trying to get information from ignorant beggars, but at the same time you shouldn't take the risk of missing important information

Eventually, the game will require you to leave the planet. You will have to find your way back to your ship make sure it's fuelled up, and take off for another star system, using long and short-range ▼







Still holding its own in the ST market is **The Pawn,** a sophisticated text and graphics adventure which sets new standards in both technical achievement and game complexity

Set in the mythical land of Kerovnia the game concerns, among other things your attempt to remove from your arm a mysterious wrist band In your quest you are helped or hindered by an eccentric cast of characters including The Devil, an unruly Princess, a gaggle of ambitious politicians and a morose snowman

Although many of these characters will promise you help you will soon find that most merely want to manipulate you to their own ends – hence the title However it's possible to have great fun with The Pawn without actually achieving anything. There are several sub-adventures which you need not complete to finish the game

What makes The Pawn stand out is the quality of its parser the input interpretation routine Unlike some games which can only accept verb-noun constructions, or which fail to recognize inexact phrases such as 'pick *it* up' The Pawn can deal with very complex sentences in straightforward English It can also deal with multi-part instructions – Pick up the key and put it in the hat on the tree-stump then of around 150

▶ scanners, weapons systems and various monitors to navigate your way through sub-space to your destination fighting off pirates all the way Sundog is not a game



words but it's the quality of the parser which makes you almost forget that you are simply playing computer game. Not to be ignored are the impressive graphics screens, which can be scrolled up and down in windows. The sheer detail and artistic quality of the graphics have to be seen to be believed although game authors Magnetic Scrolls like to regard them as a bonus in what is basically a very sophisticated text adventure

The Pawn is infused with a sense of humour which continuously sends up the whole adventure game genre, but which has apparently gone over the heads of some reviewers Seasoned adventurers and tyros alike should get a lot out of it in any case

The Pawn is the first adventure I've come across where the player is not continually frustrated by the limitations of the parser. Versions for ST QL, Amiga, CBM 64/128, and other machines are available now or on the way ◀

for the faint-hearted – the sheer scope is immense. The combination of styles means, though, that it is easy to get into and difficult to stop playing. ◀

Coming up from Rainbird is what will surely become a classic arcade game for the ST **Starglider.**

Author Jez San of Argonaut software has collaborated with writer James Follett, of "Earthsearch" fame, to produce a scenario in which an intrepid space pilot returns to his home planet to find it overrun by aliens

Your aim is to destroy the Starglider, flagship of the aliens, but to do this you must combat huge Walkers, which stalk menacingly across the landscape, and several varieties of ground and air attackers. You have laser weapons and missiles to protect you, but four missiles must be used to destroy the Starglider – and you can only



carry two at a time.

The game will include a novella setting the background, but the action is pure arcade excitement, rather than complex strategy

Starglider relies on 3-D vector graphic animation with full hidden line removal and perspective. From your cockpit viewpoint you will be able to approach any of the alien artifacts from any angle and still get an accurate representation on your "viewscreen".

Starglider includes challenging refuelling and rearming sequences, in which you must pilot your ship very precisely while under heavy enemy fire. Together with sophisticated sound effects, sampled speech and full control panel read-outs, Starglider, scheduled for an August release looks like being a winner Conversions for 6502 and Z80-based micros are also on the way ◀

Less impressive perhaps in the graphics stakes, but still a challenging strategy game, is **Hexes** from Mark of the Unicorn. On first sight this looks very much like a version of the arcade game Q*Bert, with a 3-D board made of coloured hexagons and a series of players moving around it. In fact, Hexes relies on strategy rather than quick reactions, you take alternate goes with the computer, in your attempt to turn all the hexagons one colour

You control a unicorn, which leaps from hexagon to hexagon with enviable grace.In opposition to you are a variety of unusual creatures, a triceratops, a jellyfish a scorpion, a dodo, and so on, according to the difficulty level

At the earlier levels, the game is quite straightforward Leaping on a hexagon changes its colour according to a sequence shown at the top left of the screen. At some points hexagons will only change colours if you complete a whole section in order

At higher levels things get more complex. The hexagons change colours according to more abstruse principles, and various magic spells come into use. Your enemy can take control of your player for one go, or split into two or even three places, or conceal the colour of a hexagon. You also have magic spells with which you can fight back

Overall, Hexes is a combination of traditional mind games like Solitaire and principles more familiar to computer games players - very much like EA's tactical arcade game Archon Hexes is a thinking game rather than a reflexes game, but takes advantage of the ST's graphics capabilities to produce some very impressive player graphics. ◀

Data sorted by Robtek

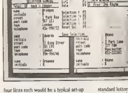
POWER WITHOUT THE PRICE IS THE PROMISE OF ROBTEK'S DB-CALC FOR THE ST. FERGUS CARPENTER PUTS IT TO THE TEST

The speed, power and memory capacity of the ST make it the idexl database machine, but up until now suitable software package for the home or small business user have been discouragingly expensive. Robtek's **DB-Calc** aims, like Atari itself, to offer power without the price

DB-Calc is, as its name suggests, a database with calculation functions. It takes full advantage of mouse control and the GEM environment, with menu selection pull-down windows, error messages and resizable windows.

Flexible

DB-Calc is a fairly straightforward "card-box"-type database, but has a remarkably flexible calculation facility With standard desk accessories loaded the memory capacity is around 50K – so 2500 records of



four linex exch would be a typical set-up On the 1040, the memory space available is over 380K.

The main display consists of two work areas, Selection and Data, and seven menu headings. The File heading allows you to load append to, save files, or quit. The next, Set Up, gives you the choice of inserting or deleting a field, or returning to start condition Choosing Add Field brings up a window which allows you to enter the name and position of your new field

The next menu, Maintain, allows you to sort data by field name, edit the data file, or delete selected records. You could, for instance, specify LONDON as the sort parameter for the TOWN field, producing a list of all your contacts in London.

You can also sort by numerical parameters using the hash symbol and wildcards can be used either numerically or alphabetically – for instance you could sort for N* in the NAME field to find all your contacts whose namex started with N

The Search menu allows you to specify upper and lower parameters for your data search The Model facility allows you to enter text – say a form letter – and merge it with information from the main data file. It's a simple form of mail merge which could save lots of time and energy in producing standard letters to specific clients.

You can make calculations within the model, using the extensive calculation facilities. The special commands used are entered as text input in the same way that you would "program" a more complex spreadsheet. Numbers are shown in floating point notation, the largest being 9.22 E18, the smallest 1 08 E-19

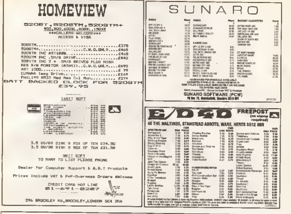
Variables

You can also use letters as variables, a principle which should come easily to Basic programmers, to produce complex calculations in conjunction with the eleven available mathematical operators, power, multiply, divide, rest after dividing, add, minus, smaller than, larger than, equal to, different to, and assignment. Many standard functions such as square root, log, exponent and so on are also available in DB-Calc.

Apart from the mathemetical functions, which would probably baffle the complete tyro, DB-Calc offers ease of use, speed and flexibility There are several example files provided on the disc, including a cash book, address list, discount log and so on These make the manual (translated from Dutch and a little short on practical exercises) much easier to understand.

Overall DB-Calc seems to serve its purpose well It's powerful enough to satisfy meny ST users without costing too much or getting bogged down in complexity ◄

Product: DB-Calc
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One in a Marillion

MARILLION'S MARK KELLY IS ONE OF MANY USERS OF STEINBERG'S PRO-24 MIDI SOFTWARE FOR THE ST MARK JENKINS EXPLAINS

Over the last year or so, Steinberg has established itself as one of the most proficient producers of music software in the world The achievements with the pro 16 package for the Commodore 64 were unprecedented, but for truly professional purposes the Commodore has proved itself a little limited

The requirements for a music computer are pretty similar to those for a business machine. Reliability is a factor but speed is every bit as important – while lost time means lost money for the businessman for the musician it means lost inspiration. There's nothing more frustrating for the composer than a long wait for a disc to load before being able to record his latest brainwave.

So a fast, reliable computer such as the Atari 520ST/1040ST has been needed before a genuinely professional music package could be developed. In the US the Apple Macintosh has been popular for a while, but the ST actually comes out better in benchmark tests, shares the advantage of the mouse-driven control system, and is of course much cheaper

The fact that the Atari computers also include a MIDI interface for direct control of musical instruments, is a bonus, although it has some drawbacks in that add-on MIDI interfaces usually include sockets for footswitches, drum machine synchronisation, tape synchronisation and so on These facilities will probably be added on to the Pro 24 package with a hardware option at a later date.

24-track

So what does Pro 24 offer the musician? The system's laid out as a 24-track tape machine – there are only 16 different channels available via MIDI, but it's useful for various reasons to have a few spare tracks available For instance, you could record several "takes" of a melody, keep them all separately, and decide which one you wanted to use during the final stages of composition.

Most computer composition packages, including Pro 16 and the very impressive C-Lab package for the C64, depend on the repetition of short sections of music with various mutes and transpositions. In practice these can become quite lengthy, but Pro 24 operates in a slightly different way The longest section recorded can be as much as 999 bars long, and can be edited in many ways, further sections are laid over it, with each MIDI channel controlling one polyphonic synthesiser, expander or drum machine.

Each of the 24 tracks is marked with a square at the top of the main screen and each can be put into record mode and set to play or remain silent. The mouse selects Record status and notes are then played from the synthesizer; you can choose to play them back exactly or with various quantisation (time correction) values.

Tempo is completely variable, as is time signature, and all recorded tracks can play back as further ones are recorded. If you use a Casio CZ101 or other "Multi-timbral" synthesizer, you can play back several different sounds on several MIDI channels simultaneously from one synth

Display

One of the wonders of Pro 24 is the amount of information squeezed into the display which is why a high resolution monochrome monitor is needed (a medium-res colour update will be available free to uses after the British Music Fair) Tempo Beep (metronome) status, Master Tempo track on/off, Synchronisation status, Memory remaining, Recording Start and End point, Channel and Pattern number, Bar and Beat number are all on display constantly – an enormous help to the composer

There are also various items of information which the user can enter – such as the name of each piece, the name of each synthesiser connected and the MIDI Mode and type of note release used for each synth.

Pull-down menus include Desk, File (for song and pattern saving), pattern, Track, MIDI (for creating the basic MIDI setup saved as part of each song), Edit (to go onto the Edit page) and Fast Access for the most important parameters.

The Edit page consists of a grid which indicates every MIDI event which has been recorded A big chord with lots of pitch bend may fill up the page, whereas simple repeated notes may fit onto the edit page by the dozen. This page also allows you to enter notes in Step Time, although this won't often be necessary considering the power of the real time quantisation function

Thanks to the Left and Right locater boxes, it's possible to drop in and record at any point to correct mistakes, and the computer will drop out again at a pre programmed point. The Track Info box gives detailed information about the contents of each track, showing whether the velocity of recorded notes has been altered and whether the track has been set to record just one or two different MIDI channels to deal with either half of a split-keyboard sound.

Synthesizer sound changes can be recorded as part of a pattern as can volumes on some synths such as the Yamaha DX7 Tracks or sections of tracks can be copied and appended to by name, and there's a good selection of error messages if you're trying to record over an existing track or call up a non-existent track.

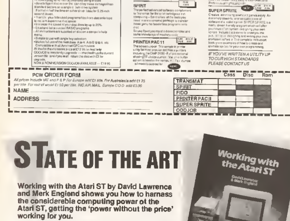
Marillion

As we mentioned there are some problems synchronising Pro 24 to tape, and professional users are buying the Roland SBX-80 unit, costing around £800, to convert SMPTE codes to MIDI clock signals which Pro 24 can follow There's a cheaper Hi Tec tape sync unit also available, but it's probably cheaper still to clock Pro 24 from a MIDI drum machine synchronised to tape, or to wait for the add-on hardware interface to turn up

Professional users of Pro 24 such as Mark Kelly, keyboardist for Marillion, have been very pleased with its performance Although the system seems imposing at first apparently it's very fast to use after a little experience, offering a choice of mouse or keyboard control Its capacity is vast, running to tens of thousands of notes on the 520 and even more on the 1040, which of course has the advantage of an integral disc drive.

It's easy to create a complete song with synthesizers and MIDI samplers using Pro 24 although of course you'll need to have the system synchronised to tape if you want to record vocals, guitars or other instruments. But as a complete professional music package Pro 24 has few rivals in the world at the moment, and virtually none at the price ◄

Product: Pro 24
Micro: Atari 520/1040 ST
Price: £250
Supplier: Oxford Synthesiser Company, 68 Wilsdon Way, Kidlington Oxford 08675 5277



Space War on BBC

by Mark Ward

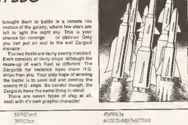
This is the first part of a three week listing of Space War. Next week features more of the listing plus the first part of the instructions.

If you can't face typing it all in then send £3 to Mark Ward 43 Wordsworth Road, Hampton, Middlesex for a copy of the game on cassette.

Your home world lies in ruins, destroyed by the Zargoids, and you and your thirty ships are the only survivors of the attack. For many desperate months you have tracked the marauding aliens across the length of the galaxy. Now you have finally brought them to battle in a remote rim section of the galaxy, where few stars are left to light the night sky. This is your chance for revenge — or oblivion. Only you can put an end to the evil Zargoid menace.

The two fleets are fairly evenly matched. Each consists of thirty ships although the make-up of each fleet is different. The Zargoids for instance have more H Q ships than you. Your only hope of winning the battle is to seek out and destroy the enemy H Q ships. Be careful though, the Zargoids have the same thing in mind!

There are seven types of ship in all, each with it's own graphic character.

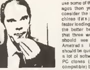


Listing 1

```
10REM   SPACE WAR
20REM    M.WARD
30ENVE OPE1,1,0,0,0 0,0 0.126 -2,0,-4
,126,126
40VDU23,224 3 6 12,255,255,12 6,3
50VDU23,225 6,49,111,226,255,226 111,
49
60VDU23,226,0,7,4 12,252,12,4,7
70VDU23,227,0,16,51,126,198,126,51,16
80VDU23,228,0,31,9,216,254,216,8,31
90VDU23,229,31,127,244,102,102,244,12
7,15
100VDU23 230,0,31,36,70,217,98 36,31
110VDU23,232,192,96 48,255,255,43,96,1
92
120VDU23,234,0,224,92,43,63,43,92,224
130VDU23,236,0,248,16,27 127,27 16,248
140VDU23,237,243,254,47,102,102,47,254
,240
150VDU23,236 0,248,36,90,155 90,36,245
160VDU23,239,216,108,54,223,223,54,108
216
170VDU23,240,1,7 21,63,127,127,255,255
180VDU23,241,128,224,248,252,254,254,2
55,255
190VDU23 242,255,255 127,127,63,31,15,
3
200VDU23,243,255,255 254,254,252,248,2
40,192
210VDU23,244,29,114,137,139,77,158,72
56
220CHAIN""
```

Listing 2

```
30MODE1:VDU19,1,4:0:19,2,3;0:19,3 1;0
;
40DIMch%(60),ps%(60),ty$(7),m%(20),o
b%(18)
50F%4,1
60PROCinit
70PROCscr
80A%=1
90PROCmove
100PROCcheck(1,30,31,60)
110PROCrm
120A%=2
130PROCcur
140PROCcheck(31,60,1,30)
150PROCma
160GOTO80
170DEFPROCmove
180GCOL3,3
190MOVE510 550:PRINT"Your go"
200FORr%=1TO4000:NEXT
210MOVE510,550:PRINT"Your go"
220FORn%=1TO30
230IFch%(n%)=0GOTO520
240B%=0:C%=0:D%=0:T$=ty$(ABS(ch%(n%)))
250PROCs_c(T$)
260GCOL3,2:@%21,0
270mv%=VAL(MID$(T$ 10,1))
280E%=FNx(n%):F%=FNy(n%)
290G%=E%:H%=F%
300REPEAT
310G=GET
320I%=ps%(n%)
330IFG=136ANDI%>24ps%(n%)=ps%(n%)-1
340IFG=137ANDG% 1224ps%(n%)=ps%(n%)+1
350IFG=138ANDH%>174ps%(n%)=ps%(n%)-31
360IFG=139ANDH%<1014ps%(n%)=ps%(n%)+31
370IFG=72ANDVAL(MID$(T$,11,1))<>0PROCh
y
380IFG=77ANDVAL(MID$(T$,14,1))<>0PROCm
1
390MOVEI%MOD31*40+24 I%DIV31*40+174
400PRINTFNsp(T$,n%)
410MOVEFNx(n%),FNy(n%)
420PRINTFNsp(T$ n%)
430G%=FNx(n%):H%=FNy(n%)
440UNTILG=135
450PROCle
460IFJ%=0VDU7:GOTO300
470FORm%=1TO30
480IFm%=n%GOTO500
490IFps%(n%)=ps%(m%)J%=0:m%=30
500NEXT
510IFJ%=0VDU7:GOTO300
520NEXT
530MOVE510,550:PRINT"Go over"
540FORn=1TO4000:NEXT
550MOVE510,550:PRINT"Go over"
560ENDPROC
570DEFPROCn
580IFB%=1ENDPROC
590K%=1
600D%=VAL(MID$(T$,11,1))+RND(2)-2
610FORm%=1TOD%
620IF(ps%(n%)-D%+m%)MOD31=0K%=0
630NEXT
640FOR m%=1TO30
650IFm%=n%GOTO670
660IFps%(n%)-D%=ps%(m%)K%=0:m%=30
670NEXT
680IFK%=0VDU7:B%=1:ENDPROC
690ps%(n%)=ps%(n%)-D%
700MOVEI%MOD31*40+24 I%DIV31*40+174:PR
INTFNsp(T$,n%)
710MOVEFNx(n%),FNy(n%):PRINTFNsp(T$,n%
)
720I%=ps%(n%):E%=E%-(D%*40):B%=1
730ENDPROC
740DEFPROCm
750IFC%=1ENDPROC
760IFL%>13ENDPROC
```



With Kenn Garroch

Three Amstrad queries

P J Long of Bedminster, in Bristol writes

Q **Firstly, can I use an Amstrad 464 with a 6128 monitor by ignoring the disc lead?**

Secondly, I read an article that said the Commodore 64 disc drive is sure to break because the protection on the disc hits the reading head, in time pushing it out of position. Is this true of the Amstrad disc drive?

Thirdly, bearing in mind that I would like to stay with Amstrad, would you recommend that an upgrade to the 6128 is a good move with a view to the future?

A Three questions in one, eh? Well here goes

Firstly yes you can use the Amstrad CPC 464 with the CPC 6128 s monitor as both the green screen and colour monitors have the RGB Din and power leads coming out of them With regard to your last question if funds allow it may be an idea to obtain a colour (if you have green screen) or green screen (if you have colour) monitor with the upgrade to give you the best of the Amstrad for both business and pleasure

Secondly the nasty Brrdddd that the Commodore disc drive makes when it comes across protection may put it out of line eventually but it will take a while As far as I know at the moment, protection routines and disc drives for the Amstrad drives work in a different way to those of the Commodore and don t do nasty things to the drive

Thirdly what you will have to consider when upgrading with the Amstrad is what you are upgrading for If you want to use some of the business packages then you may need to consider the 8256 or 8512 machines If it s just for games and faster loading times the 6128 is the better bet Bear in mind that three weeks into August should see the launch of Amstrad s IBM PC which should be quite cheap There is a lot of software available for PC clones (if they are truly compatible) both business and games so you might want to wait and see

Communications via VIA chips

S Hughes, of Llandudno in N Wales, writes

Q **I have a BBC micro, and I want to connect it to the outside world by means of the VIA chip in the user port. There are a number of registers only some of which I know enough about to use (see page 437 of the user guide) Could you give me some more information on the 6522 VIA chip and what the various registers do**

A On the BBC the 6522 is situated at FE60-FE6F giving access to all 15 of its internal registers To perform simple I/O only port B and its controls need be used If you want to use the chip to its fullest extent you ll need to get a book on the subject (there's not enough space here to detail the complex workings of all the various registers) The basic port B controls are

Reg 0&FE60 I/O register B can be written to or read depending on the contents of data direction register B (DDRB) Simply *V=?&FE60* or *?&FE=192*

Reg2&FE62 DDRB sets the direction of I/O port B Bits set to 1 denote output *0* is input. The lines on port B can be a selection of both input and output, eg *?&FE62=15* sets the bottom four lines for output the top four for input

Page 503 of the user guide shows the pin connections for the user port All you need to do is buy the appropriate connector and some prototyping board (Maplin and Tandy both sell this it allows wires and components to be plugged in, taken out tested etc) the main thing to watch out for when experimenting is that you don t connect the 5V output line of the BBC to ground this blows one of the BBC s internal fuses

For more information of the 6522 VIA in conjunction with the BBC get a copy of the *Advanced User Guide for the BBC Micro* (publishers details to come)

Disassembler on the BBC

D Charles of Cardiff in S Wales, writes

Q **For some time now, I have been wanting to write a machine code disassembler for my BBC micro Could you give me some hints on how to go about it? I understand and know how to use the assembler so machine code is not the much of a problem**

A Since speed is not really a problem with a disassembler its easier to write it in Basic The first thing to notice about 6502 machine code is that each instruction has its own particular identifying number eg CPM #10 is C9 (hex) A disassembler program needs to know the addressing mode as well as the mnemonics and their value since this then tells it how many bytes need to be extracted from the code being disassembled eg LDA &1234 extracts three bytes The first is the opcode $AD (defines LDA Absolute) the following two give the address in low byte high byte format So the code the disassembler would see is AD3412

A simple method to do this would be to create a string array 255 long (one for each of the 256 possible mnemonics plus invalid instructions use ERR or INV) and a corresponding numeric array with a code for the addressing mode The disassembler would then look at the first byte and get the mnemonic from the string array Then from the numeric array extract a code which can be used to jump to a subroutine to extract the address and format the output to the screen The subroutines you will need are one for each addressing mode ie Immediate Zero page Zero page X Absolute Absolute X, Absolute Y, (Indirect X) and (Indirect Y) In addition you will need a routine for branches (and extra here would be to put labels in the output)

One thing to be aware of is that if you start the disassembler in a random position say in the middle of data the output will not make a great deal of sense and you will get either a number of invalid codes, or gibberish There are a number of books that will provide the appropriate descriptions values addressing modes etc for 65402 one such being 6502 User s manual by Joseph J Carr from Prentice Hall I hope there is enough information here to enable you to get to get a bit further with your program

By the way, the same method can be used for any microprocessor so if you need a disassembler for the Z80 just follow the same system it s only a little more complex

Muddled by MUD

M Saunders, of Cannock, Staffs writes

Q **I have just obtained a modem for my computer and have heard about an adventure called the Multi User Dungeon Could you give me details on how to get in touch with it, and how much it costs**

A MUD is run by a department of British Telecom called New Information Services You can have a quick go on MUD by dialling 01-997 3433 for 300/300 baud modems or 01-998 8898 for 1200/75. When the system asks you for your identity type in MUDGUEST and then enter the password PROSPECT The system is only available from 1800 to 0750 hours which is, perhaps a vain attempt to help you keep your telephone charges down It costs about £1 75 an hour to play and there is a joining fee as well There are occasionally special offers on this fee. If you want to join write to MUSE Ltd 6 Albemarle Way London EC1V

Is there anything about your computer you don't understand, and which everyone else seems to take for granted? Whatever your problem *Peek* it to Kenn Garroch and every week he will *Poke* back as many answers as he can. The address is *Peek & Poke*, *PCW*, 12-13 Little Newport Street, London WC2R 3LD

Locoscript Wordcount on Amstrad PCW

by Peter Worlock

The accompanying utility provides a simple word count for Locoscript files of up to 6,600 lines – about 100 pages

The file to be checked should be saved in ASCII format (make a copy of the file because Locoscript will not reload ASCII files) You should then load and run Basic followed by this program.

It recognises words by trailing spaces and tabs Lines 160-220 do the checking, discounting double spaces and tabs, and blank lines

Obviously it's a lot of hassle for short files but for longer documents, it saves time and is accurate to about one per cent.

The £ symbol on line 110 should be a # incidently

```
10 FOR i = 1 TO 10, down$ = down$+CHR$(10), NEXT
20 home$ = CHR$(27)+"H"
30 cl$ = CHR$(27)+"E"+CHR$(27)+"H"
40 PRINT cl$
50 INPUT "Which file",file$
60 DIM word$(6600)
70 OPEN "i , 1, file$
80 entries = 0
90 WHILE NOT(EOF(1))
100 entries = entries + 1
110 INPUT £1, word$(entries)
120 WEND
130 CLOSE 1
140 words = 0
150 FOR i = 0 TO entries
160 IF LEN(word$(i)) = 0 THEN 250
170 FOR j = 1 TO LEN(word$(i))
180 t$ = MID$(word$(i),j,1)
190 t1$ = MID$(word$(i),j+1,1)
200 IF t$ < CHR$(33) AND t1$ < CHR$(33) THEN 220
210 IF t$ < CHR$(33) THEN words = words + 1
220 NEXT j
230 words = words + 1
240 PRINT home$ down$ "Total words = " word$
250 NEXT i
```

Hires on C64

by David McGlynn

The following program when run and called via a *Sys 49152* command, will place the C64 into high resolution mode.

The screen starts at 8192 decimal or 2000 hex It finishes at 16191 decimal or 3F3F hex

To change the address of the screen just *Poke 49153, low byte of address* and *Poke 49158, high byte of address*

The screen colour can be changed from cyan to whatever you wish by using *Poke 49210 no 0-15* and *Poke 49227, name same number*

```
20 REM *** HIRES (C) DAVID MCGLYNN ***
40 PRINTCHR$(147):Q=0
50 PRINT"ENTER SYS 49152 TO RUN CODE"
60 FORX=49152TO49238
70 READA:POKEX,A:Q=Q+A:NEXT
80 IFQ<>12613THENPRINT"ERROR IN DATA"
90 END
100 DATA169,29,141,24,208,169,187,141,17
105 DATA208,169,0,133,252,169,32,133,253,160
110 DATA0,169,0,145,252,200,208,251,230
120 DATA253,165,253,201,63,208,239,160,0
130 DATA169,0,153,0,63,200,192,64,208,248
140 DATA169,0,133,252,169,4,133,253,160
150 DATA0,169,3,145,252,200,208,251,230
160 DATA253,165,253,201,7,208,239,160,0
170 DATA169,3,153,0,7,200,192,232,208,248
180 DATA96,0,0
```

Future Set on Amstrad

by Pete White

The following routine produces a futuristic character set which can easily be incorporated into your own programs. The characters are based on the Data 70 set which frequently crops up in films using 'computer print

```
[illegible] SYMBOL [illegible]
[illegible] SYMBOL [illegible]
[illegible] SYMBOL 65,[illegible]
[illegible] SYMBOL 66,126,66,[illegible]
[illegible] SYMBOL 67,126,64,64,96,96,96,126,0
[illegible] SYMBOL 68,254,[illegible]66,98,98,[illegible]
[illegible] SYMBOL 69,126,64,64,120,96,96,126,0
90 SYMBOL 70,126,64,64,120,96,96,96,0
100 SYMBOL 71,126,64,64,102,98,98,126,0
110 SYMBOL 72,66,66,66,126,98,98,98,0
120 SYMBOL 73,60,16,16,24,24,24,60,0
130 SYMBOL 74,126,8,8,24,24,24,120,0
140 SYMBOL 75,68,68,68,120,100,100,100,0
150 SYMBOL 76,64,64,64,96,96,96,126,0
160 SYMBOL 77,126,74,74,98,98,98,98,0
170 SYMBOL 78,98,82,74,102,98,98,98,0
180 SYMBOL 79,126,66,66,98,98,98,126,0
190 SYMBOL 80,126,66,66,126,96,96,96,0
200 SYMBOL 81,126,66,66,98,98,106,126,4
210 SYMBOL 82,126,66,66,126,106,106,98,0
220 SYMBOL 83,126,64,64,126,6,6,126,0
230 SYMBOL 84,126,16,16,24,24,24,24,0
240 SYMBOL 85,66,66,66,98,98,98,126,0
250 SYMBOL 86,66,66,66,66,66,36,24,0
260 SYMBOL 87,66,66,66,98,106,106,126,0
270 SYMBOL 88,102,102,36,24,36,102,102,0
280 SYMBOL 89,66,66,126,16,24,24,24,0
290 SYMBOL 90,126,4,8,16,32,64,126,0
300 SYMBOL 97,0,0,126,6,126,70,126,0
310 SYMBOL 98,96,96,96,126,98,98,126,0
320 SYMBOL 99,0,0,126,96,96,96,126,0
330 SYMBOL 100,6,6,6,126,70,70,126,0
340 SYMBOL 101,0,0,126,98,126,96,126,0
350 SYMBOL 102,60,48,48,120,48,48,48,0
360 SYMBOL 103,0,0,126,70,70,126,6,126
370 SYMBOL 104,96,96,96,126,98,98,98,0
380 SYMBOL 105,24,0,24,24,24,24,24,0
390 SYMBOL 106,6,0,6,6,6,6,6,126
400 SYMBOL 107,96,96,102,102,120,108,102,0
410 SYMBOL 108,24,24,24,24,24,24,24,0
420 SYMBOL 109,0,0,126,90,90,86,86,0
430 SYMBOL 110,0,0,108,114,98,98,98,0
440 SYMBOL 111,0,0,126,102,102,102,126,0
450 SYMBOL 112,0,0,126,98,98,126,96,96
460 SYMBOL 113,0,0,126,70,70,126,6,6
470 SYMBOL 114,0,0,108,114,96,96,96,0
480 SYMBOL 115,0,0,126,96,126,6,126,0
490 SYMBOL 116,24,62,24,24,24,24,30,0
500 SYMBOL 117,0,0,102,102,[illegible]102,126,0
510 SYMBOL 118,0,0,102,102,[illegible],24,0
520 SYMBOL 119,0,0,66,66,90,90,126,0
530 SYMBOL 120,0,0,198,104,16,104,198,0
540 SYMBOL 121,0,0,102,102,102,126,6,126
550 SYMBOL 122,0,0,126,12,24,48,[illegible]
580 SYMBOL 50,126,2,2,126,96,96,126,0
590 SYMBOL 51,126,2,[illegible],6,6,126,0
600 SYMBOL 52,96,96,96,96,104,126,[illegible]
610 SYMBOL 53,126,64,126,6,6,[illegible]
620 SYMBOL 54,126,64,64,126,98,98,[illegible]
630 SYMBOL 55,126,2,4,62,16,32,64,[illegible]
640 SYMBOL [illegible],126,[illegible],126,[illegible]
650 SYMBOL 57,126,66,66,126,6,6,6,[illegible]
660 SYMBOL 48,126,102,110,118,[illegible],126
6,0
670 SYMBOL [illegible],0,255,0[illegible]
```

Graph-ST

by Wall Sabbagh

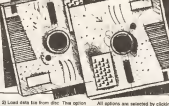
Here is part two of the three week Graph-ST listing plus instructions for using the data entry menu.

This menu is concerned with defining or loading the data file format, and offers the following options –

1) Define data from keyboard. This option must be selected by first time users as there is no data file yet stored on the disc. Once selected the following information is requested:

a) Number of blocks required (maximum of five). Each block can be analysed separately or with a combination of other blocks.

b) The name of each block.



2) Load data file from disc. This option loads a previously defined data file into memory.

All options are selected by clicking the mouse in the option box.

```
3526 GOTOXY 2,4:PRINT" STRING$(14+LEN(NAME$(SL)),"-")
3530 REM **FIND TOTALS**
3540 EX=0:EX2=0:
3550 FOR X=1 TO COUNTER%(SL)-1
3560 EX=EX+ITEM(SL,X)
3570 EX2=EX2+ITEM(SL,X)^2
3590 NEXT X
3600 GOTOXY 4,6:PRINT "NUMBER OF ITEMS ";COUNTER%(SL)-1
3610 GOTOXY 4,7: PRINT "TOTAL OF ITEMS ";EX
3620 XBAR=EX/(COUNTER%(SL)-1):GOTOXY 4,8:PRINT "AVARAGE                ";XBAR
3630 GOTOXY 4,9:PRINT "STANDARD DEVIATION ";SQR((EX2/(COUNTER%(SL)-1))-XBAR^2)
3640 GOTOXY 4,10:PRINT "VARIANCE ";((EX2/(COUNTER%(SL)-1))-XBAR^2)
3650 MAX=ITEM(SL,1):MIN=ITEM(SL,1)
3660 FOR Y=1 TO COUNTER%(SL)-1
3670 IF MAX<ITEM(SL,Y) THEN  MAX=ITEM(SL,Y)
3680 IF MIN>ITEM(SL,Y) THEN  MIN=ITEM(SL,Y)
3690 NEXT Y
3700 GOTOXY 4,11:PRINT "MAX VALUE ";MAX
3710 GOTOXY 4,12:PRINT "MIN VALUE ";MIN
3720 X=90 :Y=360:L=450:H=50:GOSUB BOX
3730 GOTOXY 7,16:PRINT "LEFT/RIGHT MOUSE BUTTON FOR BLOCK SELECTER/MENU"
3740 GOSUB 12000:IF BU=2 THEN GOTO MENU
3750 IF BU=1 THEN GOTO ARITHMATIC
3760 GOTO 3740
4000 REM ***********EDIT DATA IN BLOCK*********
4010 CHANGE:GOSUB SELECT:CLEARW 2
4020 IF COUNTER%(SL)-1=0 THEN ER$="NO DATA IN BLOCK SELECTED ":GOSUB REPORT
4025 GOTO 4110
4026 REVIEW:CLEARW 2
4030 GOTOXY 0,0:PRINT ,,CHR$(3)" BLOCK: "NAME$(SL);" " CHR$(4)
4040 PRINT ,STRING$(45,CHR$(223)):FOR X=1 TO COUNTER%(SL)-1
4050 PRINT USING "###";X;:PRINT USING "-#####.##   ,";ITEM(SL,X);
4055 IF INT (X/60)=X/50 THEN GOSUB HITM:CLEARW 2:GOTOXY 0,0
4090 NEXT X:PRINT
4100 PRINT:A$=CHR$(14)+CHR$(15):FOR Y=1 TO 40:PRINT A$;:NEXT Y:GOSUB HITM
4110 clearw 2:X=20:Y=40:H=250:L=570:GOSUB BOX :FILL 1,1
4120 GOTOXY 16,3:PRINT "***EDIT***"
4130 GOTOXY 15,4:PRINT STRING$(14,CHR$(223))
4150 GOTOXY 8,7:PRINT CHR$(17)". ALTER VALUE(S)"
4160 GOTOXY 8,8:PRINT CHR$(18)". CHANGE BLOCK NAME"
4170 GOTOXY 8,9:PRINT CHR$(19)". REVIEW BLOCK DATA"
4180 GOTOXY 8,10:PRINT CHR$(20)". EXIT EDIT"
4190 GOTOXY 12,13:INPUT"PLEASE ENTER YOUR CHOICE ";A$
4200 IF VAL(A$)<1 OR VAL(A$)>4 THEN 4190
4210 A=VAL(A$):IF A=4 THEN GOTO MENU
4220 IF A=3 THEN GOTO REVIEW
4230 IF A=2 THEN GOTO CNAME
4240 CLEARW 2:X=45:Y=50:H=100:L=550:GOSUB BOX:FILL 1,1
4250 GOTOXY 4,5 :PRINT "ENTER ITEM TO START CHANGE (1-"COUNTER%(SL)-1") ";
4260 INPUT ".,";A$:A=INT(VAL(A$)):IF A<1 OR A> COUNTER%(SL)-1 THEN GOTO 4250
4270 GOTOXY 4,3:PRINT "ITEM NUMBER ";A:
4275 IF A=COUNTER%(SL) THEN ER$="ITEM VALUE IN EDIT OUT OF RANGE":GOTO REPORT
4280 GOTOXY 4,5:PRINT "OLD VALUE: ";ITEM(SL,A),:INPUT "NEW VALUE (#=EXIT)";B$
4290 IF B$="#"THEN GOTO 4110
4300 B=VAL(B$):ITEM(SL,A)=B:A=A+1:GOTOXY 4,5:PRINT SPACE$(64):GOTO 4270
4400 CNAME:CLEARW 2:X=30:Y=50:H=100:L=550 :GOSUB BOX:FILL 1,1
4410 GOTOXY 4,5:PRINT"OLD NAME :      ";NAME$(SL)
4420 GOTOXY 4,8:INPUT"NEW NAME :      ";NAME$(SL)
4430 GOTO 4110
4900 HITM: GOTOXY 8,18:? ">>>>    HIT MOUSE BUTTON    <<<<"
4910 GOSUB 12000 :IF BU<>1 AND BU<>2 AND BU<>3 THEN 4910
4920 RETURN
5000 REM**************ALTER RANGE******
2100 RATIO=(315/(MAX-MIN)):INX=INT(500/(MAXCOUNT )):XCOR=10
2110 FOR Y=RANGE%(X,1) TO RANGE%(X,2)-1
2120 YCOR=315-ITEM(X,Y)*RATIO+14+MIN*RATIO
2130 YCOR2=315-ITEM(X,Y+1)*RATIO+14+MIN*RATIO
2140 LINEF XCOR,YCOR,XCOR+INX,YCOR2
2150 XCOR=XCOR+INX
2160 NEXT Y:YCOR2=INT(YCOR2/16)-1:XCOR=INT(XCOR/16)-1:
2162 IF YCOR2<0 THEN YCOR2=0
2163 IF xcor <0 THEN xcor =0
2165 GOTOXY XCor ,YCOR2: PRINT CHR$(16+X),
2170 FINISH: NEXT X:
2175 LINEF 2 ,315+14+MIN*RATIO,613,315+14+MIN*RATIO
2180 FOR X=10 TO MAXCOUNT*INX STEP INX
2190 LINEF X,315+14+MIN*RATIO+2,X,315+14+MIN*RATIO-2
2195 NEXT X
2200 FOR Y=INT(MIN) TO INT(MAX) STEP INT((MAX-MIN)/20)
2210 LINEF 0,315-Y*RATIO+14+MIN*RATIO,12,315-Y*RATIO+14+MIN*RATIO
2220 NEXT Y
2300 GOSUB 12000:IF BU=2 THEN GOTO MENU
2310 IF BU=1 THEN GOTO LINEGRAPH
2320 GOTO 2300
3000 REM****************BAR CHART************************
3010 BARCHART: GOSUB WHICH :GOSUB MAXMIN:MAXCOUNT=MAXCOUNT+1
3015 B=0:FOR G=1 TO BL:IF STATE%(G)=1 THEN B=B+1
3016 NEXT G
3020 ER$="N":ZBL=0:FOR X=1 TO BL:IF STATE%(X)=0 THEN ZBL=ZBL+1: GOTO 3050
3030 IF COUNTER%(X)<3 THEN ER$="MORE THAN ONE VALUE NEEDED IN BLOCK TO PLOT"
```

```
3041 IF (RANGEX(Y,2) RANGEX(X,1)) (1 THEN ER$="INCORRECT BLOCK RANGE"
3050 NEXT X:IF ZBL=BL THEN ER$ "ALL BLOCKS ARE OFF "
3059 IF ER$<>"" THEN GOTO REPORT
3065 IF MAX=MIN THEN MAX=MIN+1
3085 RATIO=26/(MAX-MIN)
3070 CLEARW 2: -10:Y=10:L=585:H=282.GOSUB BOX:COLOR 1,1,1 3,2:FILL 2,2
3070 C=0:FOR X=1 TO BL:IF STATEX(Y)=0 THEN GOTO BFINISH ELSE C=C+1
3080 SIZE=INT(500/(RANGCOUNT)):DIF=INT((12-B*2)*SIZE)/100)
3090 XCOR=10+(9-B)*X:FOR Y=RANGEX(X,1) TO RANGEX(X,2)
3095 IF ITEM(X,Y)=0 THEN GOTO 3160
3100 HIGHT=260 ITEM(X,Y)*RATIO+,5*RATIO*ON :RZERO=260+12
3105 XCOR2=XCOR+SIZE/2:IF MIN<0 THEN RZERO=RZERO+MIN*RATIO
3107 IF B=1 THEN GOTO 3151
3110 COLOR , 0 0:FOR CO=XCOR... 2+DIF
3118 LINEF CO-0 ,RZERO,CO-0,HIGHT
3150 NEXT CO
3151 COLOR 1,1,1.X
3152 LINEF XCOR2-DIF,RZERO,XCOR2 DIF,HIGHT
3153 LINEF XCOR2-DIF,HIGHT XCOR2+DIF,HIGHT
3154 LINEF XCOR2+DIF,HIGHT,XCOR2+DIF,RZERO
3155 LINEF XCOR2+DIF RZERO XCOR2-DIF,RZERO:IF ABS(HIGHT-RZERO)<3 THEN 3160
3156 IF ITEM(X,Y)<0 THEN FILL XCOR2,HIGHT 2 ELSE FILL XCOR2,HIGHT+2
3160 XCOR=XCOR+SIZE:NEXT Y
3170 BFINISH: NEXT X
3180 LINEF ... RZERO ... RZERO
3190 FOR G=0 TO BL-1:X=G*120+10+G*20:FOR Y=300 TO 323:COLOR 1,0,0
3200 LINEF X Y,X+70,Y:NEXT Y:COLOR 1,1,G+1:Y=300:L=70:H=23:GOSUB BOX
3210 FILL X+2,Y+2:
3220 GOTOXY(G*15)/2+1,19:PRINT NAME$(G+1):NEXT G
3300 GOSUB 1200:IF BU=2 THEN GOTO MENU
3310 IF B=1 THEN GOTO BARCHART
3320 GOTO 33.0
3500 REM****************ARITHMATIC DATA OPTION*****************
3510 ARITHMATIC: GOSUB SELECT:CLEARW 2.X=20.Y=20 H=290:L=580:GOSUB BOX:FILL ...
3520 IF COUNTER%(BL)-1=0 THEN ER$="NO DATA IN BLOCK SELECTED ":GOSUB REPORT
3525 GOTOXY 2,3:PRINT "NAME OF BLOCK "NAME$(SL)
```


Hi-res window on the C64

by Neil Kendall

The following subroutine will set up a high resolution window in the top third of the screen. This is useful for applications such as adventure games where text and graphics have to be displayed simultaneously. The hi-res memory is in the normal position of 8192 onwards and colour information is stored in screen memory 1024 onwards.

The machine code is initialised by using *Gosub 60000* and called by *Sys 49152*.

The size of the window can be altered by poking different numbers into location 49240.



```
60000 L=50020 FORI=49152TO49333:L=L+10
60005 T=0 FORJ=0TO5:READA POKEI,A T=T+A
60010 I=I+1 NEXTJ:READB
60015 IFT<>BTHENPRINT"ERROR IN ";L:STOP
60020 I=I-1:NEXTI:RETURN
60030 DATA76,115,192,173,25,208,709
60040 DATA24,106,144,46,169,255,744
60050 DATA141,25,208,169,223,45,811
60060 DATA17,208,141,17,208,169,760
60070 DATA247,45,24,208,141,24,689
60080 DATA208,169,0,141,10,208,744
60090 DATA169,127,45,17,208,141,707
60100 DATA17,208,120,169,59,141,714
60110 DATA20,3,169,192,141,21,546
60120 DATA3,88,76,49,234,173,623
60130 DATA25,208,24,106,144,246,753
60140 DATA169,255,141,25,208,169,967
60150 DATA32,13,17,208,141,17,428
60160 DATA208,169,8,13,24,208,630
60170 DATA141,24,208,169,120,141,803
60180 DATA10,208,169,127,45,17,584
60190 DATA208,141,17,208,120,169,863
60200 DATA3,141,20,3,169,192,528
60210 DATA141,21,3,88,76,49,378
60220 DATA234,173,14,220,41,254,936
60230 DATA141,14,220,120,169,3,667
60240 DATA141,20,3,169,192,141,666
60250 DATA21,3,88,169,255,141,677
60260 DATA25,208,169,1,141,26,570
60270 DATA208,169,147,32,210,255,1021
60280 DATA162,0,32,210,255,232,891
60290 DATA189,164,192,201,255,208,1209
60300 DATA245,96,17,17,17,17,409
60310 DATA17,17,17,17,17,17,102
60320 DATA17,17,17,17,17,255,340
60330 DATA120,169,49,141,20,3,502
```

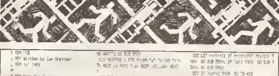
UXB game on Spectrum

by Ian Grainger

In this entertaining arcade style game you play the part of Dynamite Dave who has been hired by the local council to defuse the bombs in the YTS Training Centre. To do this you must collect the bombs, of which there are five on each floor of the building.

Over the ten floors are distributed a number of hazards from the remains of previous defusees to a worm that appears after four levels. The worm can help as well as hinder because it leaves a block behind as it chases you around the screen. Also, gravestones pop up from time to time just to confuse matters. Full instructions are given in the program which will be presented over three weeks.

Should you not feel up to the task of typing it all in then send £2 to Ian Grainger, 33 Wellfield Road, Wingate, County Durham TS28 5LA and he'll send you a copy.



```
  1 REM UXB
  2 REM Written by Ian Grainger
  3 REM (c) 1985
  4 
  9 REM Data for Graphics
 10 DATA 3,7,15,31,11,12,7,3,0,128,192,
224,64,192,128,0,31,63,71,135,31,56,48,9
6,224,240,136,132,224,112,48,24
 20 DATA 63,64,152,160,160,160,160,128,
248,4,242,10,10,2,2,2,128,128,160,160,15
8,64,63,0,10,10,10,10,58,4,248,0
 30 DATA 0,1,7,31,63,31,7,1,120,248,248
,24,120,56,120,248,0,0,0,0,0,0,0,0,120,2
,0,0,0,0,0,0
 40 DATA 7,31,49,49,59,30,15,4,224,248,
140,140,220,120,240,32,198,227,252,63,31
,252,240,192,99,199,63,252,240,63,15,3
 50 DATA 3,12,48,65,163,79,159,44,0,128
,128,128,192,240,248,92,165,47,45,37,31
,15,3,0,76,92,92,76,248,240,192,0
 60 DATA 1,7,31,63,63,99,109,237,128,22
4,248,252,252,76,90,91,227,237,237,237,2
55,255,255,255,71,95,95,95,255,255,255,2
55
 70 DATA 63,127,110,123,63,15,31,31,128
,192,192,192,128,0,0,0,31,31,15,15,7,3,0
,0,0,134,195,225,255,254,252,56
 79 REM Data for machine code
 80 DATA 58,72,92,33,0,88,119,17,1,88,1
,255,2,237,176,58,140,92,50,141,92,22,2
7,0,0,197,33,0,64,1,0,24,126,162,119,35,
 120,177,22,247,122,15,87,193,16,234,2
01
 90 DATA 33,0,232,17,0,64,1,0,16,237,17
6,33,0,248,17,0,80,1,0,2,237,176,201,33,
0,64,17,0,232,1,0,16,237,176,33,0,88,17
0,248,1,0,2,237,176,201
 99 REM Set up graphics
100 CLEAR 59391
105 PAPER 0: BORDER 0: CLS : LET p=5: L
ET s1=0: LET e=1: LET l1=7: LET x=0: LET
 y=10: LET a$="SETTING UP GRAPHICS- PLEA
SE WAIT": GO SUB 9000
110 RESTORE : FOR f=USR "a" TO USR "t"+
7: READ a: POKE f,a: BEEP .001,40: NEXT
f
120 FOR f=15600 TO 16383: POKE f+42896,
PEEK f: BEEP .001,40: NEXT f
130 RESTORE 60: FOR f=64256+(37*8) TO 6
4256+(44*8)+7: READ a: POKE f,a: BEEP .0
01,40: NEXT f
140 RESTORE 80: FOR f=64200 TO 64247: R
EAD a: POKE f,a: NEXT f
150 RESTORE 90: FOR f=64100 TO 64145: R
EAD a: POKE f,a: NEXT f
160 POKE 23607,251
170 POKE 23658,0
180 DATA "DOM","RAM","CPM": RESTORE 180
: DIM h(3): DIM h$(3,3): FOR f=1 TO 3: R
EAD h$(f): LET h(f)=(4-f)*5000: NEXT f
200 REM Main loop
210 GO SUB 1000
220 GO SUB 2000
225 GO SUB 2030
226 IF le=10 THEN GO TO 6100
230 PAPER 1: BORDER 1: INK 6: CLS : PRI
NT AT 10,12;"LEVEL "; INK 5;le
240 GO SUB 4000: RANDOMIZE USR 64200
250 PAPER 0: BORDER 0: INK 7: CLS
260 IF PEEK 59392=0 THEN GO SUB 3000:
GO TO 260
270 RANDOMIZE USR 64100
280 GO SUB 5000
290 GO SUB 5100
291 IF le>3 THEN GO SUB 8900
300 LET x=INT (RND*16)+1: LET y=INT (RN
D*8)+1: IF b(x,y)<>1 THEN GO TO 300
310 LET b(x,y)=0: PRINT AT (y-1)*2,(x-1
)*2; INK 5;"  ";AT (y-1)*2+1,(x-1)*2;
"  "
315 IF bo=1 THEN LET le=le+1: LET sc=s
c+500: LET d=d-1: GO TO 225
320 REM movement
330 BEEP .01,10: BEEP .01,12
335 LET t1=t1+1: IF t1/d1=INT (t1/d1) T
HEN GO SUB 5900: IF le>3 THEN GO SUB 7
500: GO SUB 8910
337 IF lost=2 THEN GO TO 405
338 IF lost=1 THEN GO TO 400
340 IF INKEY$="" THEN GO TO 335
345 LET t1=t1+1: IF t1/d1=INT (t1/d1) T
HEN GO SUB 5900: IF le>3 THEN GO SUB 7
500: GO SUB 8910
350 IF INKEY$="q" THEN LET x1=x: LET y
1=y-1: GO SUB 7000: GO TO 400
360 IF INKEY$="a" THEN LET x1=x: LET y
1=y+1: GO SUB 7000: GO TO 400
370 IF INKEY$="o" THEN LET x1=x-1: LET
y1=y: GO SUB 7000: GO TO 400
380 IF INKEY$="p" THEN LET x1=x+1: LET
y1=y: GO SUB 7000: GO TO 400
390 IF INKEY$="m" THEN LET x1=x: LET y
1=y: GO SUB 7050: GO TO 300
400 IF lost=1 THEN LET lost=0: GO SUB
8000: GO SUB 5005
405 IF lost=2 THEN LET lost=0: GO SUB
8000: GO SUB 5005: IF li>0 THEN GO TO 2
91
410 IF li=0 THEN GO SUB 4050: GO TO 50
0
420 GO TO 310
499 REM Flag row and high score
500 LET pos=0: FOR f=1 TO 3: IF sc>h(f)
THEN LET pos=f: RANDOMIZE USR 64200: G
O TO 520
510 NEXT f: GO TO 640
520 FOR f=2 TO pos STEP -1: LET h(f+1)=
h(f): LET h$(f+1)=h$(f): NEXT f
530 LET p=6: LET p1=0: LET e=1: LET l1=
7: LET x=0: LET y=0: LET a$="Please ente
r your initials intotodays flag ceremon
y. Use keys: O- Left    P- Right    M- S
elect": GO SUB 9000
540 LET p=1: LET p1=0: LET e=6: LET l1=
7: LET x=0: LET y=9: LET a$=" ABCDEFGHIJ
KLMNOPQRSTUVWXYZ .!: ": GO SUB 9000
```

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The software house: skill or chance?

David C Ridge finishes a two-part series of advice to potential entrepreneurs

The single most important factor in the sales of your product is the quality and quantity of your advertising. Sure, it's nice to have a great product, but if nobody knows about it how will they buy it?

However, advertising will not make people buy your product if they have no need or want for that product. But good advertising informs people who already want such a product, where they can get it and why yours is better. And don't worry about how saturated the market might be with similar products there is always room for the best so make sure that yours is.

It is vital to accurately assess the latest trends and prejudices in the market. If the buying public has recently had a bad experience with a similar product then your product no matter how good will feel the brunt of the prejudice.

In most cases this will be decided by which machine the people involved have experience with. However, in the unlikely event that you have a choice to make then make the decision based on the active installed user base. This is not to be confused with how many machines have been sold. The real question is how many machines have been sold *in the market you wish to address* and how many are still being used?

No one would deny that the Spectrum is incredibly popular and the number of publications which cater to its users would seem to verify that. The same goes for Amstrad and Commodore. Some people claim that certain obscure computers are much more popular than they really are. How many Enterprise publications are there?

This underscores a point I made earlier about knowing the market you wish to address. It's entirely possible that a particular computer is phenomenally popular *in another country* but has not caught on where you are. This will be reflected by the publications available locally.

Predicting the way a market will go and then charting your business course accordingly is the fastest way I can think of to go broke. After considerable experience and observation, I have no choice but to turn a wonderful and historical phrase coined by Sir Winston Churchill – The computer industry is a riddle, wrapped in mystery, inside an enigma! You have no more chance of predicting the outcome of the introduction of a new machine than you have of predicting when the post will arrive (or if it will arrive).

Think about some recent events. Was it logical to introduce the Spectrum+ with no joystick port, no sound and a tacky keyboard? Was it logical that Sinclair, at the time a major force in world computing, would introduce a business computer with a squidgy keyboard, finicky mass-storage and 128K Ram?

Is it logical that Commodore, with arguably the largest installed user base in the world, should be having financial difficulties? Is it logical that the Apple II, which was designed in 1976, is still selling today? I'm just trying to emphasise a point. Sure, looking at it logically, the Atari ST seems to have all the right ingredients to become an overwhelming success. But that doesn't mean a thing.

So in conclusion, I will say that if it sounds appealing to you to risk it all, work yourself unconscious and then be left scratching your head at the end of the day then starting a software house could be for you. But there's no doubt about it – you'll be working in a house of cards.


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